

We claim:

1. A container carrier system for use in an automated process for filling containers of a plurality of sizes, the carrier system comprising:
  - a. a pallet comprising a structure defining a plurality of compartments for holding containers, each compartment of a size adapted to hold a first container size; and
  - b. a plurality of pucks, each puck structured to be removeably loaded onto the pallet to adapt a compartment to hold a second container size;whereby the pallet can be repetitively configured to hold various desired combinations of containers of the first size and the second size by loading and unloading pucks from the pallet.
2. The container carrier system of claim 1, further comprising a puck configuration subsystem for repetitively configuring the pallet to hold various desired combinations of containers of the first container size and second container size by loading and unloading pucks.
3. The container carrier system of claim 2, further comprising a pallet conveyor for transporting the configured pallet from the puck configuration subsystem to the filling process and returning the pallet from the filling process to the puck configuration subsystem for reconfiguration.
- 20 4. The container carrier system of claim 2, wherein the puck configuration subsystem comprises:
  - a. a puck unloading station for unloading pucks from the pallet; and
  - b. a puck loading station for loading pucks on the pallet.

5. The container carrier system of claim 4, wherein the puck unloading station comprises:

- a. a puck picker comprising one or more grippers for selectively gripping and releasing the pucks; and
- 5 b. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove a selected number of pucks from the pallet.

6. The container carrier system of claim 4, wherein the puck loading station comprises:

- a. a puck picker comprising one or more grippers for selectively gripping and releasing pucks; and
- 10 b. a plurality of linear actuators for positioning the puck picker such that the puck picker can load a selected number of pucks on the pallet.

7. The container carrier system of claim 1, further comprising a second plurality of pucks, each puck of the second plurality of pucks structured to be temporarily loaded onto the pallet to adapt a compartment to hold a third container size.

15 8. The container carrier system of claim 7, further comprising a puck configuration subsystem comprising:

- a. a puck unloading station for unloading pucks from the pallet;
- b. a first puck loading station for loading the plurality of pucks on the pallet; and
- c. a second puck loading station for loading the second plurality of pucks on the

20 pallet.

9. The container carrier system of claim 1, wherein each pallet further comprises a tag for electronically storing information relating to the puck configuration of the pallet.

10. The container carrier system of claim 9, further comprising a tag reader and writer for reading the tag and electronically storing information on the tag relating to the puck configuration of the pallet.
11. The container carrier system of claim 1, wherein the containers are cylindrically shaped.
- 5           12. The container carrier system of claim 11, wherein the containers are prescription bottles.
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13. The container carrier system of claim 11, wherein the pallet comprises a base and a superstructure defining a plurality of compartments of a cuplike shape, each 10 compartment having a bottom adjoining the base, tubular side walls and a top defining an opening for receiving a container or puck.
14. The container carrier system of claim 13, wherein the pucks are of a cuplike shape having a top, tubular outer side walls, tubular inner side walls, and a bottom, the inner 15 side walls defining a tubular opening for receiving a container, and the inner and outer side walls defining a tubular slot between the inner and outer side walls at the bottom for receiving the tubular side walls of a compartment.
15. The container carrier system of claim 1, wherein the pallet further comprises a tag for electronically storing information relating to the puck configuration of the pallet.
16. The container carrier system of claim 15, further comprising a tag reader and writer 20 for reading and storing information relating to the puck configuration of the pallet.
17. A container carrier system for use in an automated process for filling containers of a plurality of sizes, the system comprising:

a. a plurality of pallets, each pallet comprising a structure defining a plurality of compartments for holding containers, each compartment of a size adapted to hold a first container size;

5 b. a plurality of pucks, each puck configured to be temporarily inserted into a compartment to adapt the compartment to hold a second container size;

c. a puck configuration subsystem for configuring each pallet to hold a desired combination of containers of the first container size and second container size  
by inserting or removing pucks from the compartments; and

d. a pallet conveyor for transporting configured pallets from the puck

10 configuration subsystem to the filling process and returning empty pallets  
from the filling process to the puck configuration subsystem for  
reconfiguration.

18. The container carrier system of claim 17, wherein the puck configuration subsystem  
comprises:

15 a. a puck unloading station for unloading pucks from each pallet; and  
b. a puck loading station for loading pucks on each pallet.

19. The container carrier system of claim 18, wherein the puck unloading station  
comprises:

20 a. a puck picker comprising one or more grippers for selectively gripping and  
releasing pucks;

b. a puck accumulator belt for accumulating pucks; and

c. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove a selected number of pucks from the pallet and release the selected pucks onto the puck accumulator belt.

20. The container carrier system of claim 18, wherein the puck loading station comprises:

- 5       a. a puck picker comprising one or more grippers for selectively gripping and releasing pucks;
- b. a puck accumulator belt for accumulating pucks; and
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- 10       c. a plurality of linear actuators for positioning the puck picker, such that the puck picker can remove a selected number of pucks from the accumulator belt and load the selected pucks on the pallet.

21. The container carrier system of claim 17, further comprising a second plurality of pucks, each puck of the second plurality of pucks structured to be temporarily inserted into a compartment to adapt the compartment to hold a third container size.

22. The container carrier system of claim 21, wherein the puck configuration subsystem

- 15       comprises:
- a. a puck unloading station for unloading pucks from each pallet;
- b. a first puck loading station for loading the plurality of pucks on each pallet; and
- c. a second puck loading station for loading the second plurality of pucks on each pallet.

20       23. The container carrier system of claim 17, wherein each pallet further comprises a tag for electronically storing information relating to the puck configuration of each pallet.

24. The container carrier system of claim 23, wherein the puck configuration subsystem further comprises a tag reader and writer for reading and storing information on each tag relating to the puck configuration of each pallet.

25. The container carrier system of claim 17, wherein the containers are prescription bottles.

26. A bottle carrier system for use in an automated process for filling prescription bottles of a plurality of sizes, the system comprising:

a. a plurality of bottle pallets, each pallet comprising a structure defining a plurality of compartments for holding bottles, each compartment of a size adapted to hold a first bottle size;

b. a plurality of pucks, each puck structured to be temporarily inserted into a compartment to adapt the compartment to hold a second bottle size;

c. a puck configuration subsystem for configuring each pallet to hold a desired combination of bottles of the first and second bottle size by inserting and removing pucks from the compartments, the puck configuration subsystem comprising:

i. a puck unloading station for unloading pucks from each pallet, the puck unloading station comprising:

1. a puck picker comprising one or more grippers for selectively gripping and releasing pucks;
2. a puck accumulator belt for accumulating pucks; and
3. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove a selected number of

- pucks from each pallet and release the selected pucks onto the  
accumulator belt;
- ii. a puck loading station for receiving pallets from the unloading station  
and loading pucks on each pallet, the loading station comprising:
1. a puck picker comprising one or more grippers for selectively  
gripping and releasing pucks; and
2. a plurality of linear actuators for positioning the puck picker  
such that the puck picker can remove a selected number of  
pucks from the accumulator belt and release the pucks into  
compartments of the pallet; and
- d. a pallet conveyor for transporting pallets through the puck configuration  
subsystem and transporting configured pallets from the puck configuration  
subsystem to the filling process and returning empty pallets from the filling  
process to the puck configuration subsystem for reconfiguration.
- 15 27. A bottle carrier system for use in an automated process for filling prescription bottles  
of a plurality of sizes, the system comprising:
- a. a plurality of bottle pallets, each pallet comprising a structure defining a  
plurality of compartments for holding bottles, each compartment of a size  
adapted to hold a first bottle size;
- 20 b. a first plurality of pucks of a first size, each puck of the first plurality of pucks  
structured to be temporarily inserted into a compartment to adapt the  
compartment to hold a second bottle size;

c. a second plurality of pucks of a second size, each puck of the second plurality of pucks structured to be temporarily inserted into a compartment to adapt the compartment to hold a third bottle size;

d. a puck configuration subsystem for configuring each pallet to hold a desired combination of containers of the first, second and third container size, by inserting or removing pucks from the compartments of each pallet, the puck configuration subsystem comprising:

i. a puck unloading station for unloading pucks from each pallet, the puck unloading station comprising:

1. a puck picker comprising one or more grippers for selectively gripping and releasing pucks;
2. a first puck accumulator belt for accumulating pucks of the first size;

3. a second puck accumulator belt for accumulating pucks of the second size; and

4. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove a selected number of pucks of the first size from the pallet and release the selected pucks of the first size onto the first accumulator belt and

remove a selected number of pucks of the second size from the pallet and release the selected pucks of the second size onto the second accumulator belt;

ii. a first puck loading station for receiving pallets from the unloading station and loading pucks of the first size on each pallet, the first loading station comprising:

1. a puck picker comprising one or more grippers for selectively gripping and releasing pucks; and
2. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove selected pucks of the first size from the first accumulator belt and load the selected pucks of the first size into compartments of the pallet; and

10 iii. a second puck loading station for receiving pallets from the first loading station and loading pucks of the second size on each pallet, the second loading station comprising:

1. a puck picker comprising one or more grippers for selectively gripping and releasing pucks; and
2. a plurality of linear actuators for positioning the puck picker such that the puck picker can remove selected pucks of the second size from the second accumulator belt and load the selected pucks of the second size into compartments of the pallet; and

20 e. a pallet conveyor for transporting pallets through the puck configuration subsystem and transporting configured pallets from the puck configuration subsystem to the filling process and returning empty pallets from the filling process to the puck configuration subsystem for reconfiguration.

28. A container carrier system for use in an automated process for filling containers of a plurality of sizes, the system comprising:

- a. a plurality of pallets, each pallet comprising a structure defining a plurality of container positions, each container position adapted to temporarily retain a 5 puck;
- b. a plurality of pucks of a first size, each puck structured to be temporarily retained at a container position to hold a container of a first size;
- c. a plurality of pucks of a second size, each puck structured to be temporarily retained at a container position to hold a container of a second size;
- d. a puck configuration subsystem for configuring each pallet to hold a desired 10 combination of containers of the first container size and second container size by loading and unloading pucks from the container positions; and
- e. a pallet conveyor for transporting configured pallets from the puck configuration subsystem to the filling process and returning empty pallets 15 from the filling process to the puck configuration subsystem for reconfiguration.

29. A method for automatically filling prescription orders, at least a portion of the orders

comprising prescription containers of a first and second size, the method comprising:

- a. providing a plurality of pallets, each pallet comprising a number of 20 compartments for holding containers of a first size;
- b. organizing the orders into groups, each group comprising a total number of prescription containers equal to or less than the number of compartments;
- c. determining the number of containers of the second size in each group;

- d. providing a plurality of pucks, each puck structured to adapt a compartment to hold a container of a second size;
  - e. assigning a group to a pallet;
  - f. loading the compartments of the pallet with a number of pucks equal to the number of containers of the second size in the group assigned to the pallet;
  - 5 g. loading the compartments of the pallet with containers of the first and second size, wherein containers of the first size are inserted into compartments without a puck and containers of the second size are inserted into compartments with a puck; and
  - 10 h. transporting the pallets through an automated dispensing system to fill the containers.
30. The method of claim 29, wherein at least a portion of the orders comprise prescription containers of a third size, the method further comprising the step of:
- a. determining the number of containers of the third size in each group;
  - b. providing a second plurality of pucks of a second size, each puck of the second plurality of pucks structured to adapt a compartment to hold a container of a third size;
  - 15 c. loading the compartments of the pallet with a number of pucks of a second size equal to the number of containers of the third size in the group assigned to the pallet; and
  - 20 d. inserting containers of the third size into compartments with a puck of the second size.

31. The method of claim 30, wherein the automated prescription dispensing system further comprises a plurality of filling machines, and wherein the step of organizing the orders into groups comprises the step of determining an optimal grouping of orders to allow each group to be filled using a minimal number of filling machines.

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